

REMARKS

Claims 1-15 were pending at the time of the Office Action. In this Amendment, claim 1 has been amended to clarify an aspect of the invention of that claim. Support is found in, for example, paragraphs [0056]-[0058] of the application-as-published (2007/0063321). New claim 16 has been added. Support is found in, for example, Figs 6-9 and paragraphs [0064]-[0071] of the application-as-published. Care has been exercised not to introduce new matter.

Rejections of Claims Under 35 U.S.C. § 103

Claims 1-6 and 8-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts et al. (U.S. Patent No. 6,335,548, hereinafter “Roberts”) in view of Pederson (U.S. Publication No. 2005/0001562, hereinafter “Pederson”). Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Roberts in view of Pederson, one embodiment, FIG. 12 and further in view of Roberts, another embodiment, FIGS. 1-15. The rejection are traversed for the following reasons.

Amended claim 1, in pertinent part, recites “an insulation main body,” “at least two heat sinks of electrically and thermally conductive metallic materials,” and “a lower portion of each of each of the at least two heat sinks is exposed to the outside of the bottom surface of the main body through the opening of the main body.” As disclosed in paragraph [0056]-[0057] of the application-as-published, the main body 1 may be formed of an insulation material such as a plastic resin, and the heat sink 7 is formed of metal such as copper (Cu), gold, silver (Ag), silicon carbide (SiC) or aluminum (Al). It is apparent that heat sinks of metallic materials have higher electrical and thermal conductivity than those of insulation and semiconductor materials, and can be easily fabricated by normal metallurgy processing.

The proposed combination of Roberts and Pederson fails to disclose the limitations regarding “an insulation main body,” “at least two heat sinks of electrically and thermally conductive metallic materials,” and “a lower portion of each of each of the at least two heat sinks is exposed to the outside of the bottom surface of the main body through the opening of the main body.”

Roberts’ dies 1909-1911, 202, on which the Examiner relied to disclose the “at least two heat sinks,” are **semiconductor optical emitters, such as LED die, LEPs, PLEDs or OLEDs, made of inorganic semiconductor compound or the conductive polymer polyaniline for electroluminescence.** (See column 15, line 55-column 16, line 17) In addition, Pederson’s light emitting diode 306, on which the Examiner relied to disclose the “at least two heat sinks” on page 4 of the Office Action, includes **a ceramic and/or heat resistant base 334 and a light source 336 positioned centrally within the ceramic and/or heat-resistant base.** (See paragraphs [0118]-[0119]) In contrast, claim 1 requires the “at least two heat sinks” to be formed of “electrically and thermally conductive metallic materials.”

Moreover, while the Examiner relied on Roberts’ dies 1909-1911, 202 and Pederson’s light emitting diode 306 to disclose “a lower portion of each of each of the at least two heat sinks is exposed to the outside of the bottom surface of the main body through the opening of the main body,” the combination of Roberts’ dies 1909-1911, 202 and Pederson’s light emitting diode 306 cannot result in “a lower portion of each of each of the at least two heat sinks is exposed to the outside of the bottom surface of the main body through the opening of the main body.” Pederson’s LED light source 306 is not a LED die but a packaged light emitting diode, which includes a ceramic and/or heat-resistant base 334 and a light source 336 positioned centrally within the ceramic and/or heat-resistant base. Roberts’ dies 1909-1911, 202 correspond to

Pederson's light source 336 positioned within the base 334 rather than Pederson's LED light source 306. Both of Pederson's light source 336 and Roberts' dies 1909-1911, 202 cannot be exposed to outside through the main body because the bottom surface of a die should be attached to another component. In contrast, claim 1 requires the "lower portion of each of each of the at least two heat sinks" to be "exposed to the outside of the bottom surface of the main body through the opening of the main body."

Accordingly, as each and every limitation must be disclosed or suggested by the cited prior art references in order to establish a *prima facie* case of obviousness (*see*, M.P.E.P. § 2143.03) and for at least the foregoing reasons the proposed combination of Roberts and Pederson fails to do so, it is respectfully submitted that claim 1 as well as claims dependent thereupon all are patentable over the combination of Roberts and Pederson.

New claim 16 is patentable over the cited prior art, because the cited prior art fails to disclose the limitations of claim 16 regarding "at least two heat sinks of electrically and thermally conductive materials, the heat sinks being separated from each other and fixed to the main body, each of the at least two heat sinks having an upper surface and a lower surface, the lower surface of each of the at least two heat sinks being relatively wider than the upper surface of each of the at least two heat sinks;" and "a light emitting diode die mounted on one of the upper surfaces of the heat sinks, the light emitting diode die having a lower surface facing the upper surface of each of the at least two heat sinks, wherein the upper surface of each of the at least two heat sinks is wider than the lower surface of the light emitting diode die, so that the light emitting diode die mounted partly on a portion of the heat sink."

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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